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Citation for published version:
Burich, L & Williams, J 2020, 'Children's welfare knowledge of and empathy with farm animals: A qualitative study', *Anthrozoös*, vol. 33, no. 2, pp. 301-315. https://doi.org/10.1080/08927936.2020.1719769

Digital Object Identifier (DOI):
10.1080/08927936.2020.1719769

Link:
Link to publication record in Edinburgh Research Explorer

Document Version:
Peer reviewed version

Published In:
Anthrozoös

Publisher Rights Statement:
This is an Accepted Manuscript of an article published by Taylor & Francis in Anthrozoos on 15/3/2020, available online: https://www.tandfonline.com/doi/abs/10.1080/08927936.2020.1719769.

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OPEN ACCESS

Download date: 05. May. 2023

Children's welfare knowledge of and empathy with farm animals: A qualitative study

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Conflict of interest statement

The authors declare that there is no conflict of interest.

Abstract

Public concern for farm animal welfare is increasing in the UK, as is evidenced by recent legislation. Calls have been made to enhance awareness of food, farming and farm animal welfare among school children, yet educators have very little research available to aid meaningful design of farm animal welfare education. This paper uses an interdisciplinary approach to investigate Scottish children's welfare knowledge and perspectives on farm animals. The study set out to explore: a) children's knowledge of the welfare needs of cows, lambs and chickens, b) beliefs about farm animal sentience, c) the extent to which children empathized with farm animals, and d) the impact of first-hand experience on attitudes towards farm animals. Data was collected from six focus group interviews with children aged 6 to 11 years and allowed both developmental and gender comparisons. While children were not indifferent to the welfare and treatment of farm animals, the study identified very large gaps in children's knowledge of farm animal welfare needs. While children endorsed animal sentience and readily took the perspective of cows, chickens and sheep, empathy was *cognitive* rather than *affective*. Most children had had little contact with farm animals and perceived of them in a more abstract sense than they did pet animals. Our study highlights the potential of direct interaction with farm animals to enhance children's welfare concern and compassion for farm animals. Findings also identified an interest in discussing the ethical aspects of killing animals for human consumption among children aged 10 years and older.

Keywords

animal welfare, farm animals, education, children, empathy

Introduction

Animal welfare is a key concern for the UK and Europe (Animal Welfare Act, 2006; Commission of the European Communities, 2006). A growing public concern for the welfare of farm animals is reflected in developments such as the 'RSPCA Assured' labelling scheme (2015) and in legislation by the Farm Animal Welfare Council (The 'Five Freedoms', 2009). Concurrently, research has pointed to a lack of food knowledge among British children (Cornish Mutual, 2010; RSPCA, 2013). Governmental reports have urged educators to make farm animal welfare education a more substantial part of the school curriculum (Farm Animal Welfare Committee, 2011; Farm Animal Welfare Council, 2009).

Changes in agricultural practices throughout the 20th century have created a gap between systems of food production and consumer consciousness (Foer, 2010; Franklin, 1999; Mullin, 1999; Thomas, 1983). Consumers now primarily encounter farm animals as objectified body parts and learn to dissociate meat products from their animal origin (Franklin, 1999: Hoogland, Boer & Boersema, 2005). Simultaneously, some animals are increasingly anthropomorphized, particularly pets, which are regarded as family members and "serve as companions and the locus of nurturing and caretaking behavior" (Mullin, 1999, p. 214).

How do these parallel trends of commodification and anthropomorphization impact upon children's perspectives on farm animals?

Most research into attitudes to farm animal welfare focuses on adults. Religious and political beliefs have been identified as predictors of animal welfare concern, as has

age, with younger people seeming more concerned about animal welfare (Deemer & Lobao, 2011; Kellert, 1996; Nibert, 1994; Ohlendorf, Jenkins & Tomazic, 2002). Others (European Union Commission, 2007; Knight, Cherryman & Nunkoosing, 2004) have reported little or no relationship between political values and attitudes to animal welfare. Some have found support for the 'underdog hypothesis' which posits that oppressed groups such as women, blacks and the poor are more likely to be concerned about animal wellbeing (Kendall, Lobao & Sharp, 2006). Researchers have highlighted a rural-urban divide, with farmers and rural dwellers being less likely to be concerned with animal well-being than urbanites (Hills, 1993; Kellert, 1996; Kendall et al, 2006; Ohlendorf et al, 2002). In contrast, a 2007 survey by the European Commission reported that attitudes to animal welfare were unrelated to social or demographic factors.

This study examined Scottish primary school children's perspectives on farm animals, exploring multiple dimensions such as knowledge, experiences and empathy.

Approaching a theoretical framework

The study of children's relationships with farm animals are at the intercept of multiple research areas. In this study, insights from psychological, sociological and anthropological research were integrated to form an interdisciplinary theoretical framework. Figure 1, developed from Muldoon, Williams, Lawrence, Lakestani & Currie (2009), presents the theoretical underpinning of the study.

<Insert Figure 1>

It should be emphasized that the relationship between attitudes, knowledge, experience, empathy and compassion is highly complex and that they each impact on one another in ways that are not clear (Jamieson et al., 2013, p. 2). For the purposes of this study however, and for the sake of clarity, the areas are analyzed as separate entities.

In relation to knowledge of animals, developmental psychology research has been dedicated to children's acquisition of biological knowledge. Hatano and Inagaki (1994), and Coley (2007) argue that children's biology concepts develop through analogy to humans; for example, children use their extensive knowledge of their own bodies as a vantage point for developing knowledge of other animals (Hatano & Inagaki, 1994, p. 175). Children also learn about animals from direct contact with animals and experience of rural life (Inagaki, 1990; Williams & Smith, 2006).

Importantly, children learn about animals via the media. Stewart and Cole (2009) argue that children's mass media contribute to a food socialization process whereby children are taught to differentiate ethical concern for animals according to their perceived utility to humans. Children internalize an 'animal typology' which discerns three categories of animal: farm animals, who are objects not individuals, wild animals, who are beyond human control and representative of forces of nature, and pets, who are most analogous to humans.

Research on children's understanding of animal needs is very sparse and tends to focus on the welfare needs of pets, or animals in general, rather than animals raised for food. Findings from previous research on children's understanding of animals

needs suggest strong developmental trends (Melson & Fogel, 1989; Muldoon, Williams & Lawrence, 2016; Myers, Saunders & Garrett, 2004). Whereas young children's understanding only encompasses physiological needs such as food and water, with increasing age their understanding expands to also include ecological needs (space, shelter and habitat), and, in the case of wild animals, conservation needs (Myers et al., 2004).

The extent to which animals are regarded as sentient (e. g. capable of feeling pain, discomfort and emotion) is crucial to the way humans view animals and their moral responsibilities towards them (Herzog & Galvin, 1997; Knight et al., 2004). The few studies that have considered children's and young adults' beliefs in animal sentience conclude that sentience varies by species, with some animals being perceived as more sentient than others (Bowd, 1982; Fonseca et al., 2011; Hawkins & Williams, 2016; Muldoon et al., 2016). Animals that are emotionally close to humans, such as pets, and animals who are morphologically close to humans, such as monkeys, are perceived as most sentient, while fish and "pest" animals such as rats are considered the least sentient (Phillips & McCulloch, 2005). There is a gradual acceptance of sentience with age, which may impact on attitudes towards animal use (Phillips & McCulloch, 2005). Kellert (1985) found that among US 6 to 16-year-olds ethical concern for animals was more common with adolescents than younger children.

Another significant aspect of children's behavior towards animals is empathy. 'Cognitive empathy' refers to "intellectually taking the role or perspective of another person", and affective empathy has been described as "responding with the same emotion to another person's emotion" (Gladstein, 1983, p. 468). Lack of empathy

towards animals is associated with childhood animal cruelty and linked to anti-social behavior in later life (Arluke, 2006; Arkow, 1996; Flynn 1999;). Muldoon et al (2009) reported an association between past and present pet owning and higher levels of animal-oriented empathy. However, humane educational interventions on children's compassion for animals report modest or no changes in empathy (Ascione, 1992; Fitzgerald, 1981; Hawkins, Williams & Scottisch SPCA, 2017; Vockell & Hodal, 1980).

While there has been a range of studies on children's relationships with pets (e.g. Marsa-Sambola et al., 2016; Melson, 1991) similar studies considering farm animals are rare. Ellis and Irvine (2010) examined the complex emotional experiences of young people aged 9 to 18 years enrolled in a livestock apprenticeship programme. They found that young apprentices learned to manipulate empathy for the animals they raised in order to cope with their eventual slaughter. Jamieson et al.'s (2013) study of UK adolescents' attitudes to farm animal welfare found that although 14 to 15-year-olds agreed with fundamental animal welfare principles, their knowledge of farm animal welfare needs was limited, and they did not believe that their choices as consumers had any real impact on animal welfare. Recently, Hawkins, Ferreira & Williams (2019) found that although baseline knowledge of farm animals was low, a digital farm animal welfare intervention increased knowledge of farm animal welfare and belief in farm animal minds.

The aims of this study were:

1. To assess children's knowledge of farm animal welfare needs.

2. To examine children's beliefs about farm animal sentience.

3. To determine the extent to which children show empathy towards farm animals.

4. To compare all of the above in terms of age and gender and direct experience of farm animals.

Methods

Participants and procedure

Table 1 provides details on the sample distribution. 12 girls and 10 boys between the ages of 6 to 11 years participated in six same-sex focus groups (3 girls' groups and 3 boys' groups). Three to five children participated in each group. Participants were selected to match specific age and gender criteria in order to allow comparison between groups. In two groups, however, criteria could not be met due to a lack of children in the specific age group in attendance. Therefore one 9-year-old girl was included in the group of 10 to 11-year-old girls, and two 7-year-old boys were included in the group of 8 to 9-year-old boys.

>Insert Table 1<

Research was carried out at an after-school club in Edinburgh that provides afterschool care for children from four inner city primary schools in areas of ranging socio-demographic characteristics. Ethical approval for the study was obtained from the University Ethics Committee. Opt-in consent was required from parents. In advance of the first research session a child-friendly information sheet was distributed at the after-school club. On the day of a research session individual children would be

approached by the researcher or a member of staff and invited to participate in focus groups.

At the beginning of each focus group participants would fill in a child-friendly assent form with supervision and guidance from the researcher. The researcher (lead author) emphasized that participation is voluntary. In three of the six sessions, one participant chose to opt out of the focus group at this point.

Focus groups are considered particularly useful for conducting research with children. As opposed to one-on-one interviews, in a focus group setting children have 'power in numbers' and this is perceived to aid the power imbalance between the adult researcher and the child (Peek & Fothergill, 2009).

Focus groups were around one hour in length. Discussion loosely followed a protocol, but themes introduced by participants were also explored. The researcher's aim was to create a relaxed environment where children felt at ease. Norms about freedom of expression were set at the start of each session, when the researcher explained that every contribution was valuable, and that there "are no right or wrong answers." In order to set the researcher apart from other authority figures (Gibson, 2007), the researcher adopted a warm and friendly approach to children and, rather than being dismissive of "silliness", actively listened to and showed enthusiasm for humoristic or "silly" anecdotes offered by children.

The groups had three phases. The first was a warm-up exercise where children were asked to discuss their favorite and least favorite farm animals. In the second stage,

children were shown photos of three farm animals (a cow, a chicken and a lamb) and asked to discuss each of them in turn. For each animal, the same set of questions were asked. Firstly, “what do you know about this animal?”, and secondly, “what does this animal need to stay well?”. Subsequently, questions relating to animal sentience such as, “does this animal feel pain/happy/sad/afraid the same way as humans?”. And finally, questions tapping into direct experience such as “what is this animal like?”, and “have you ever met/seen a real one?”.

>Insert Figure 2<

In the final phase, participants responded to a vignette entitled ‘Farm Fire’. The vignette was adapted from the ‘Fireman Test’ which is designed to assess the extent to which children value animal life (Ascione, 1992). Children were presented with a collage containing nine objects: a cat, a dog, a chicken, a games console, a television, a teddy bear and a family photo album. They were then read the accompanying narrative, stated below, and asked to collectively make a choice about what the firefighter should do.

Mr. Jensen lives on his small farm with his family. One day there is a fire on the farm. Mr. Jensen, his wife and children immediately leave the farm and wait for the firefighters to arrive. 5 minutes later the firefighters arrive. A firefighter goes inside to save as many of the family’s things as they can. They can only take 3 things at a time. Which 3 things should the firefighter save first?

In general children were keen to talk about farm animals and seemed to enjoy the

sessions. After a session, participants would often give verbal positive feedback such as: ‘this was really fun’.

Analysis

Focus group data was subjected to thematic analysis (Braun & Clark, 2006) and a 6-step guide to analysis was adhered to. After familiarizing ourselves with the obtained data – a stage of reading and rereading the text, noting down initial ideas – we started systematically coding interesting features across the entire data set. Having arrived at an extensive set of codes, we then considered how codes may combine to form overarching themes. This led to the development of a codebook with parent and child codes (for example: ‘welfare needs of chickens’ as parent code, ‘diet’, ‘environment’, ‘company of other chickens’ as child codes.) At this point, inter-coder reliability was tested using percent agreement, which is a common measure of reliability among thematic analysis researchers (Guest, MacQueen & Namey, 2012, p. 89). 95 % inter-coder agreement was obtained, and further analysis ensued. Themes were reviewed and data relevant to each theme was gathered.

Results

Knowledge of welfare needs

>Insert Figure 3<

When discussing welfare needs of a specific farm animal, children tended to describe needs that are general to all animals. Figure 3 shows most focus groups identified diet as a need and to a lesser degree a suitable environment, company and medicine. After

outlining essential welfare needs for one species of animal, children would then repeat these needs when considering another animal without making any further additions, even when being probed to do so ('is there anything else this animal needs?'). They would rarely mention specific facilities or features of the environment that would allow an animal to express its natural behavior. This suggests that they lack knowledge of species-specific welfare needs of farm animals (e. g. a chicken likes to dust-bathe and have things to perch on, a cow does not).

Children held a view of humans and animals as engaged in a mutually beneficial relationships, where animals give products in exchange for food and protection:

> Researcher: Ok. So would that be the reason why you have to look after them - because they give you something back
>
> Anna: No... you feed them all, then they give you something back
> *(8 to 9-year-old girls)*
>
> […]
>
> Researcher: Ok, so a lamb, what do you know about a lamb?
>
> Cameron: They're really furry
>
> Charlie: And they give people wool for their jumpers and their jackets
> *(8 to 9-year-old boys)*

This view was common across all ages and both genders. Interestingly, in the group of

8 to 9-year-old girls, this naïve view of modern agricultural production coexisted with knowledge of slaughter in modern abattoirs:

> Anna: The cows get into this really scary place, they go to this factory - they are alive - it's really far away from here, like in the countryside, and there's a big gate, and then people grab these cows with lifting things and they put them on the moving thing and they get a hook and a little belt and it lifts up […]

This account received exclamations of horror from the group; however, they did not seem to perceive any conflict between this and their naïve view of food production.

Only boys mentioned affection from humans as a welfare need, describing how they would 'pet', 'stroke', 'cuddle' or 'kiss' a farm animal to keep it happy. In contrast, girls tended to lay more emphasis on company of the animal's own kind as a means of fulfilling the animal's social needs:

> Amy: And also they need a home, they need some friends, they need like freedom so they can run around like not tiny bit of space because [inaudible]
>
> Researcher: Uh huh, so they need plenty of space

Amy: It's really good and they run around so they've got… other chickens, food, free space.

(8 to 9-year-old girls discussing chickens)

Misconceptions about biological processes were typical among younger children. These misconceptions often involved magical thinking, perhaps to fill knowledge gaps:

Daniel: They need chocolate in the grass to make chocolate milk

(6 to 7-year-old boys discussing cows)

Other misconceptions included: that chickens 'eat chicken's eggs', that chickens' 'combs are poisonous', and that 'sheep drink milk but don't make milk'. Misconceptions were also present with older children, though they used more biologically appropriate language.

Beliefs about animal sentience. Children attributed equal sentience to the three animals discussed. While older children generally endorsed the view that farm animals are sentient, the discussion typically evolved from considering this category of animal to a debate about whether *all* animals are sentient.

Among older children this topic stimulated particularly lively debate:

Luke: Fish don't have brains

Andrew: They don't have brains but they should have feelings

Luke: When they don't have brains they can't feel anything

Jack: They can!

Andrew: They can... how would they swim

Luke: They must be programmed to swim

Jack: Every animal has a brain

[…]

(10 to 11-year-old boys)

In contrast, children aged 7 and below seemed to struggle with the concept of sentience, either taking a yes-no position without being able to explain their choice, or misconstruing sentience as having to do with disease:

Researcher: So for instance can a cow feel sad?

Adam: And sick

Daniel: Sometimes a cow can get sick

(6 to 7-year-old boys)

In summary, children's perceptions of animal sentience had a strong developmental aspect. While young children struggled to understand the concept of sentience, older children were adamant that animals can experience emotions, although there was uncertainty about whether different species have the same emotional range and whether intelligence ('brains') is a prerequisite for sentience. Those caveats were

generally applied to smaller animals like fish and insects, though, and sentience was more readily granted to cows, chickens and lambs.

Empathy with farm animals. The 'Firefighter Test' was designed to assess children's valuation of animal life and their capacity for empathy with animals. In response to the presented dilemma, all children came to the same conclusion that animals must be saved first. Further, their justification for this choice was similar. Across all ages and both genders, children demonstrated an understanding that animals are valuable because they are alive, as opposed to the inanimate objects also featured on the collage:

> Jack: I'm gonna go with dog, cat and chicken
>
> Andrew: The same
>
> Researcher: Ok. You all agreed on that really fast. How come?
>
> Jack: Because they're animals and they need safety
>
> Andrew: Well I mean they're living things, I mean the PlayStation, family photos and TV is not that important
>
> Jack: Family photos *are* important, but they [the animals] are more important
>
> Luke: It's like a human, you have to save humans before other things
>
> *(10 to 11-year-old boys)*

They also empathized with animals, speculating how they might feel in the given circumstances:

> Researcher: Ok so does everyone agree that he should take these three things [animals] first?
>
> All: Yes
>
> Researcher: Why is that, then?
>
> Anna: Cause they're alive
>
> Amy: Cause they're living things
>
> Caitlin: They… are scared
>
> Anna: They can die quicker and they can panic more
>
> *(8 to 9-year-old girls)*

A firm belief in animal sentience ("they are scared", "they can panic more") seemed to underpin children's choice to prioritize animals in a fire rescue operation. Animals should be rescued promptly not only because they are living beings, but because they can feel scared and panicked.

In four out of six groups, children came to an almost immediate agreement over what should be saved first. In the two remaining groups, the firefighter vignette provoked more of a discussion amongst the children. In the group of 6 to 7-year-old boys, debate over whether a chicken would need rescuing from a fire caused considerable

emotional distress to 6-year-old Adam, whose color rose and whose pace of speech quickened during this exchange:

Oliver: Chicken, teddy bear and cat

Daniel: No, they should take the animals first

Adam: Animals first

Daniel: Cat, dog and chicken

Oliver: But the chicken will fly out

Researcher: You [Adam] agree with Daniel, don't you - these three things?

Adam: Yes

Researcher: Why?

Adam: Because they [the animals] could be trapped somewhere and they're the most important ones because they're actually creatures… and the rest of it, you can just get... you can just buy

Researcher: And what did you say Oliver, you disagree

Oliver: The chicken would be able to fly, so I would take the Playstation, the cat and the dog

Adam: It [the chicken] might be injured, its wings might be injured so it can't fly

Although Adam was not the only child to appear emotionally moved during focus groups, his reaction was unusual. Out of the 22 children participating in focus groups, only three children were discernibly emotionally stimulated by the debate. Another instance of heightened emotion was observed in the group of 10 to 11-year-old boys. Questions around the morality of killing animals for food was not an item on the focus group protocol. Nevertheless, the topic cropped up in two groups. During one of these discussions, 10-year-old Jack exhibited an intensity of emotion, expressed through a fast-paced and higher pitched voice, that contrasted with the calm and detached manner of other children:

Jack: Mmh, I don't think it's fair on the chicken [to eat it]

Andrew: Well people need to kill animals so they can live

Jack: But it's not fair… how would they like to die - what if they were the chicken?

Researcher: Mmh. What do you think Luke?

Luke: I don't know... there must be quite a lot of chickens in the world… and man survived early age by hunting

Andrew: That's true

Jack: Yeah but why do they have to have the chicken. They can have any other food instead of hunting, they can have... yoghurt. Fruit,

vegetables!

(10 to 11-year-old boys)

Children rarely talked about how an animal's predicament made them feel (only two children mentioned feeling 'sorry' or 'sad' for an animal, in both cases the animal in question being a horse), rather they argued in a detached rational manner which signaled *cognitive* empathy rather than affective empathy. Jack and Adam's palpable distress from empathizing with a farm animal was an exception from the rule and provided rare examples of affective empathy. Further research is required to establish whether the prevalence of cognitive rather than affective empathy is indeed characteristic of urban children's relationships with farm animals. There were no significant gender differences regarding empathetic responses.

Direct experiences with farm animals. The extent of direct experience with farm animals varied greatly between participating children. A few children reported that they kept or used to keep chickens at home and were involved in the daily tasks of caring for them. But most commonly, contact with farm animals happened in the context of a family or school trip. Thus, most children had had limited and sporadic contact with farm animals. Most accounts of experiences with farm animals were negative; children perceived a barrier of communication and were frustrated that they did not know how to interact with them:

Researcher: Yeah, ok. Have you ever met a cow in real life?

Together: Yeess

Researcher: Ok, so Mia can you tell me about it?

Mia: It's annoying, it made a noise even though I asked it to be quiet, but it wouldn't be quiet so I hit it in the stomach and the stomach jiggled

Researcher: What, you hit it in the stomach?

Mia: Yeah, like that [shows with arms]

Researcher: Yeah? What did it do then?

Mia: It jiggled

(6 to 7-year-old girls)

In encounters with farm animals, children would often feel overwhelmed by the noise or smell of them:

Researcher: So you've seen a real one, what was it like, did you like them?

Daniel (shakes head)

Researcher: No? Why?

Adam: Baah

Oliver: Did you not like it because it went 'baah'?

Daniel: Yeah. Too noisy.

(6 to 7-year-old boys)

*

Leah: I don't like farm animals ‘cause... the cow stinks, and the chicken is really annoying ‘cause at night it makes noises and stuff and the lamb goes 'baah'

(10 to 11-year-old girls)

Positive accounts of interactions with farm animals were more common among children who had regular contact with them, for instance this girl whose family used to keep chickens:

Anna: Sometimes chickens can get scared and they're like 'ooooh', but if you pet them they'll be fine, they're kind of like cats

(8 to 9-year-old girls)

In summary, children who only had sporadic contact with farm animals reported more negative experiences than those who had intimate, day-to-day contact. The former also seemed to be more sensitive to the smells and noises of farm animals, suggesting that their lack of contact with farm animals disposes them to be more easily overwhelmed by them.

Discussion

Children’s perspectives on farm animals and knowledge about their welfare needs were examined through focus group interviews. While most children had had some contact with farm animals and the countryside and understood the basic need for food

and shelter, species-specific knowledge of welfare needs was lacking, and misconceptions were plenty. Similar findings have been reported in other focus group research (Muldoon et al, 2016). These results highlight the need for education on farm animals and their welfare needs in order to reconnect urban children with their natural worlds and give them further insights into agriculture and the source of their food.

According to Stewart and Cole (2009), from an early age, children internalize an 'animal typology' in which farm animals are objectified while pet animals are humanized. Our findings suggest that characterizing relationships with farm animals and pets as a dichotomy of objectification and humanization is inappropriate. Instead, relationships with animals are more accurately described as a *continuum of emotional attachment*, with pets being emotionally closer to children than farm animals. In the present study, children ascribed sentience and intent to farm animals and accorded them moral status, thus regarding them as subjects not objects. The factor that differentiated children's relationships with farm animals from their relationships with pets, then, was a sense of emotional detachment.

Findings from this study indicated that though children were emotionally detached from farm animals, they were not indifferent to their welfare and treatment. Where the concept of sentience could be grasped, children strongly endorsed animal sentience. This finding is in line with quantitative research on children's understanding of sentience, or animal minds, in this age range (Hawkins & Williams, 2016; Menor-Campos, Hawkins & Williams, 2018). Phillips and McCulloch (2005), who considered adolescents, reported that perceived sentience was associated with emotional closeness to humans; our results contradict this, as belief in sentience was

strong, especially among the older children, although the farm animals considered were emotionally distant to children.

Importantly, the extent of direct experience with farm animals seemed relevant for children's perspective on them. We report this finding cautiously, as the focus group method makes it difficult to ascertain the exact distribution of individuals' amount of experience. Bearing this is mind, we noted that children who shared stories of having been involved in the day-to-day tasks of looking after a farm animal tended to feel more positively inclined towards them than the children who did not contribute such input.

Instilling compassionate attitudes towards farm animals is key to securing compassionate treatment of them; but, as these animals are often destined for slaughter, empathy directed towards them is not without its complications (Franklin, 1999; Mullin, 1999). Considering the moral ambivalence attached to farm animals, it is perhaps not surprising that farmers have been reported to be less concerned about animal welfare, and more likely to display utilitarian attitudes towards animals, than urban populations (Hills, 1993; Kellert, 1996; Kendall et al, 2006; Ohlendorf et al, 2002).

From these studies one might infer that extensive interaction with farm animals *diminishes* rather than enhances empathy and concern for them. But, where farmers are concerned, what obstructs empathy is perhaps not the extent of interaction they share with their animals, but the part they play in the animals' death; ethnographic studies have illuminated how caring for *and* killing animals demands of farmers

emotional boundary-work that urban populations largely manage to evade (Ellis & Irvine, 2010; Holloway, 2001; Wilkie, 2005).

Being able to interact with and care for farm animals without the moral problem of having to harm them (at least directly), urban children are in a position where empathy towards these animals can be enhanced with relatively little complication. In their study of livestock program apprentices, Ellis and Irvine (2010) reported that children aged 8 to 13 years (who had yet to fully understand the fate awaiting "their" animals) readily empathized with the farm animals they cared for, giving them human-like names and considering them their friends. Similarly, we found that regular contact with a farm animal seemed only to enhance empathy in children aged 6 to 11 years.

Among children aged 10 years and older we identified an emerging interest in discussing the morality of killing animals for consumption. This is something for educators to take into consideration. Where, for younger children, the primary focus of educational intervention should be to cultivate interest in farm animals and enhance empathy and knowledge of their needs, older children may benefit from engaging in discussion of the ethics of raising animals for food, in a bid to help them navigate the "caring-killing paradox" attached to those animals (Arluke 1994; Hawkins et al, 2017). While farm animals may be raised for food, it is important for children to be taught about the welfare implications of different production systems (intensive regimes tend to have a negative impact on welfare), and that although an animal may be reared for food production, it is still possible for a farm animal to experience positive welfare and a happy, healthy life (Hawkins, Ferreira & Williams, 2019).

In conclusion, this study showed that although children have some understanding of farm animal welfare and sentience, and this increases with age, their knowledge lacks depth and species-specificity. While children showed cognitive empathy towards farm animals there was limited evidence of affective empathy. Although more research is needed, our results suggest that enhancing opportunities for urban children to interact with or directly observe farm animals might enhance empathy and a more compassionate approach to farm animals and food consumption. Educators might also take into consideration the fact that children aged 10 years and older expressed an interest in discussing the ethical implications of farming animals.

Acknowledgements

We would like to thank after-school club staff for their assistance and children for participating.

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Table 1. Focus group sample information.

Group	**Number of children in group**	**Mean age**	**Std. deviation**
6-7 year-old girls	4	7.6	0.41
6-7 year-old boys	3	6.5	0.54
8-9 year-old girls	5	9.2	0.45
8-9 year-old boys	4	8.4	0.70
10-11 year-old girls	3	10.8	0.79
10-11 year-old boys	3	10.9	0.63

Figure 1. The connections between attitudes, knowledge, direct experience, empathy and compassion.

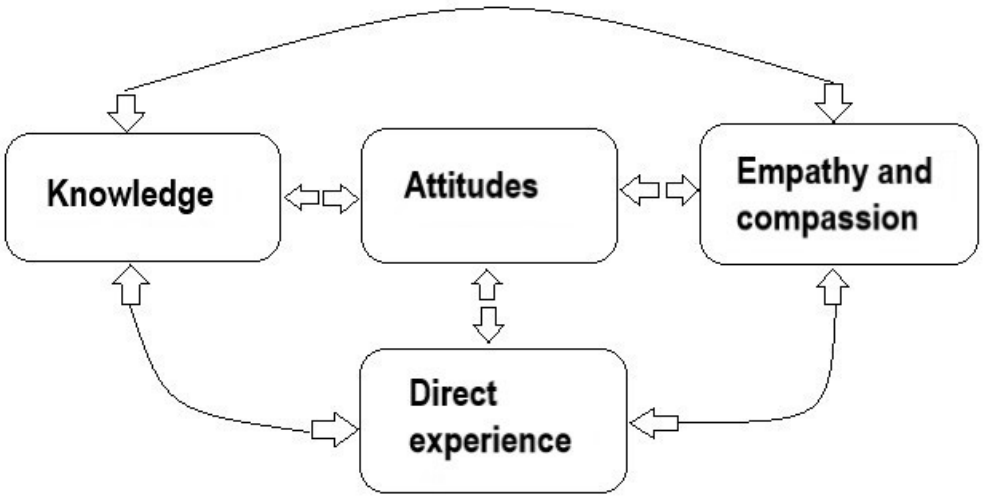

Figure 3. Welfare needs by species of animal.